AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A force sensor fabricated in a micro machined process, for use in for instance a nanoindentation setup, wherein said force sensor comprise:

– a membrane movable in relation to a bulk structure;

– at least one detection element in a detection structure in connection with a bulk structure;

– connectors for connecting said force sensor to electronics;

wherein said membrane is attached to said bulk structure through at least one spring and that said membrane include a probe holding structure, said at least one spring provide said membrane with movement capabilities for said membrane in at least one direction with respect to said bulk structure; said movement is measured using said at least one detection element.

2. (Previously Presented) The force sensor according to claim 1, wherein said detection structure comprise at least three detection elements; providing both lateral and horizontal sensitivity.

3. (Previously Presented) The force sensor according to claim 1, wherein a force acting on a probe attached to said probe holding structure is measured by detecting capacitive changes between said membrane and said detection element.

4. (Previously Presented) The force sensor according to claim 1, wherein a force acting on a probe attached to said probe holding structure is measured by detecting a piezoelectric effect in a detection element.

5. (Previously Presented) The force sensor according to claim 1, wherein said membrane has a rectangular shape as seen from a view perpendicular to a plane parallel to said detection element.

6. (Previously Presented) The force sensor according to claim 1, wherein said membrane is attached to said bulk structure with eight springs.

7. (Previously Presented) The force sensor according to claim 6, wherein said springs are located two on each side of said membrane as seen from a view perpendicular to a plane parallel to said detection element; said two springs are located in a mirror like formation providing symmetric movement.

8. (Previously Presented) The force sensor according to claim 1, wherein said at least one spring comprise a U-shaped form with heels protruding at two respective open ends in order to space said U-shaped form away from said membrane and said bulk structure.

9. (Previously Presented) The force sensor according to claim 1, wherein said probe holding structure is formed with a recessed open end relative said bulk structure.

10. (Previously Presented) A nanoindentation system for use in a transmission electron microscope comprising

- a force sensor comprising:
    a. a membrane movable in relation to a bulk structure;

b. at least one detection element in a detection structure in connection with a bulk structure;

c. connectors for connecting said force sensor to electronics;

wherein said membrane is attached to said bulk structure through at least one spring and that said membrane include a probe holding structure, said at least one spring provide said membrane with movement capabilities for said membrane in at least one direction with respect to said bulk structure; said movement is measured using said at least one detection element;

- a nanoindentation probe mounted on said force sensor;
- a displacement device; and
- a sample holding structure;

wherein said force sensor, nanoindentation probe, displacement device, and sample holding structure are mounted on a transmission electron microscopy (TEM) sample holder, said sample holding structure and nanoindentation probe are movable in relation to each other.

11. (Currently Amended) The nanoindentation system according to claim 10, wherein said displacement device is an inertial motor[[;]].

12-15. (Cancelled)